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MARKETING COTTON- from FARMER to CONSUMER

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MARKETING COTTON--FROM FARMER TO CONSUMER 1/

Technology has changed significantly in recent years at all stages of the marketing system for cotton and cotton textile products. Associated with these developments have been changes in market structure and organization, and in efficiency of providing marketing services. In addition, the ever-changing character of consumer demand for textile products greatly influences the cotton and cotton-products industries.

The cotton industry is faced with rising costs, competition from foreign cottons for export outlets, the problem of maintaining and improving quality, the need to find and promote new uses and markets for cotton, and competition from manmade fibers, plastics, paper, and other raw materials.

Marketing Cotton Lint 2/

A half-million farms located in all southern States from Virginia to California market about 10 to 15 million bales of cotton annually. 3/ Over half of the crop is grown in the Southwest and the West, and only about 15 percent in the Southeastern States, where the textile mill industry is concentrated. Thus, a large proportion of the crop is transported long distances to domestic mills or to ports for export. Cotton is harvested and ginned in late summer and fall, but is processed by domestic and foreign mills on a year-round basis. Hence, storage is another major function of the cotton marketing system.

Physical Flow and Processing

Transportation of seed cotton: Cotton is hauled in trailers from the fields as it is harvested to nearby cotton gins (figure 1). In almost all areas of the Cotton Belt, producers do the hauling. In some areas, ginning firms provide trailers as a means of obtaining additional ginning volume. Trailers used today in major producing areas hold enough seed cotton to yield from 4 to 8 bales of ginned lint.

Ginning: At the gin, seed cotton is conditioned, cleaned, and the lint is separated from the seed and packaged into bales weighing roughly 500 pounds. Some gin owners also grow cotton, merchandise cotton, operate cottonseed oil mills, or have other related business interests. Both vertical and horizontal integration at various stages of the marketing system are increasing.

In 1964, about 5,000 gins in the United States processed approximately as large a volume of cotton as 25,000 processed 50 years ago. The steady decline in number of gins and the increase in volume handled per gin accompanied a sharp rise in the cost of constructing a modern gin plant. By the midsixties, capital outlays for a single new high-capacity gin plant approached $500,000. The cost of gins has risen because of increased capacity, the need for drying and cleaning equipment since the widespread adoption of mechanized harvesting, and the rise in the general price level. Machine harvesting has greatly speeded up harvesting and delivering of cotton to gins. To keep pace, many ginners have added gin stands and other equipment, or installed new, higher-capacity machinery.

1/ Prepared by Edward H. Glade, Jr., agricultural economist, Marketing Economics Division, Economic Research Service, USDA.

2/ This section is based mainly on "Marketing Cotton and Cotton Textile," by Curtis Cable in Agricultural Markets in Change, Econ. Res. Ser., USDA, AER-95, also reprinted as ERS-317.

3/ Major cotton-growing States are commonly divided into the following four areas: West--Arizona, California, and New Mexico; Southwest--Oklahoma and Texas; Midsouth--Arkansas, Louisiana, Mississippi, Missouri, and Tennessee; Southeast--Alabama, Georgia, North Carolina, South Carolina, and Virginia.

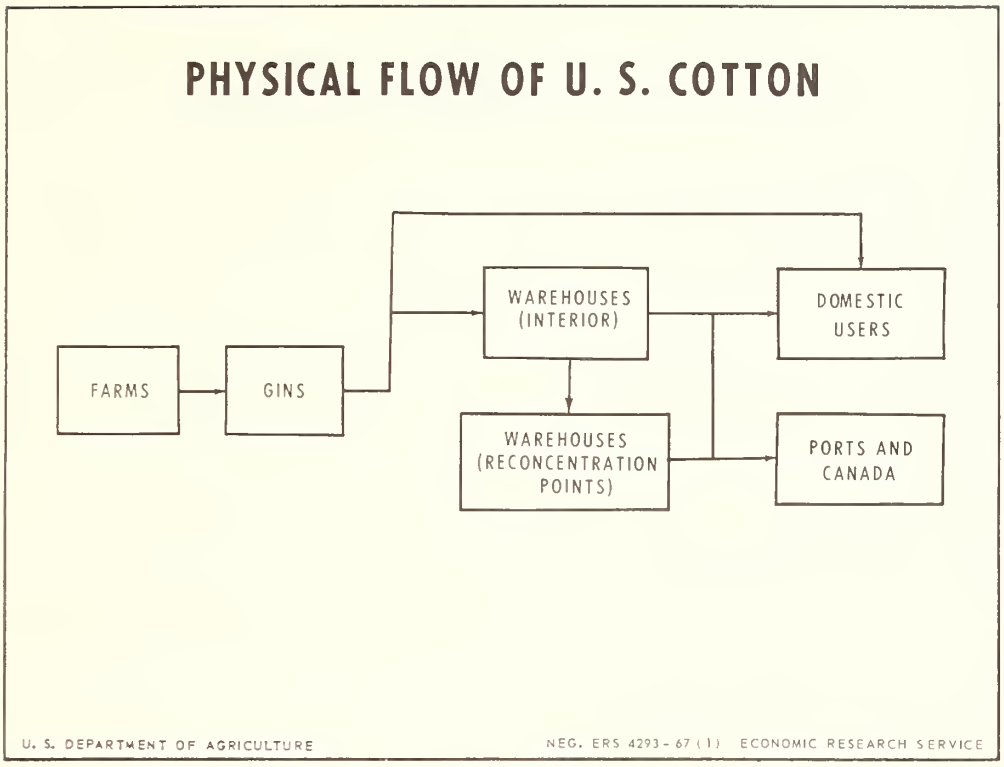


Figure 1

Charges for ginning cotton have almost quadrupled since the early thirties, closely following the year-to-year increases in ginning costs. 4/5/

Warehousing and compressing: Compressing baled lint facilitates handling and storing of cotton. In the Southeastern States, much cotton moves direct from gins to local mills; in other areas of the Cotton Belt, the crop moves from gins through warehouses with compresses. At almost all gins the bales are pressed to a density of about 12 pounds per cubic foot. To decrease the space required for storage and transportation, most bales are further compressed. For domestic shipment, bales are compressed to standard density of about 23 pounds per cubic foot; for export shipments they are compressed to high density, about 33 pounds per cubic foot. A small percentage of the total crop is pressed to standard density at the gin, thus eliminating the extra handling and compression at warehouses. Most of the gins equipped with standard density presses are located in the West.

In addition to compressing and storing baled lint, the cotton warehouse firms perform other services necessary to merchandise the crop. Some of these services are weighing, reconditioning bales, issuing negotiable warehouse receipts, sampling, sorting, and assembling cotton in even-running lots for shipment at the direction of merchants, and loading rail cars and other carriers.

In the midsixties, there were about 1,200 cotton warehouses in the United States, with a total storage capacity of 27 million bales. Twenty-five percent of the capacity was in the Southeast, 34 percent in the Midsouth, 33 percent in the Southwest, and 8 percent in the West. Fourteen firms controlled half of the total warehouse storage capacity--operating 205 warehouses (17 percent of the total number).

4/ Economic Research Service and Consumer and Marketing Service. Charges for Ginning Cotton, Costs of Selected Services Incident to Marketing, and Related Information, Season 1965/66. U.S. Dept. Agr. ERS-2, July 1966.

5/ Frazier, S. J., and Fleming, M. L. (Compiled by). Statistics on Cotton and Related Data. U.S. Dept. Agr. Statis. Bul. 99, June 1951.

Since the late thirties, the number of warehouses has declined about 15 percent. Much of this decline occurred in the Southwest and the Midsouth where many small warehouses were available to farmers and local buyers for storing bales during and immediately after harvest. After central market firms purchased the cotton, they moved it from country points to larger facilities located at transportation centers. However, since the improvement in roads and the use of flat-bed semitrailer trucks, an increasing proportion of the Nation's crop moves directly from gins to centrally located storage facilities by passing assembly points.

Only about a fourth of the warehouses had compress facilities in the midsixties, but these had some two-thirds of the total U.S. storage capacity for cotton. Less than 1 percent of the warehouses in the Southeast had compresses. The approximate percentages in other areas were: Midsouth, 60 percent; Southwest, 55 percent; and West, 85 percent. The number in the West with compresses has almost tripled since the late thirties.

Charges for warehousing and related services in the United States have trended upward since the early forties, following a period of fairly stable charges during the thirties.

Transportation of baled lint: Ginners generally arranged for the transportation of baled lint from gins to warehouses. Costs of this service usually are included in ginning charges.

Much of the cotton crop moves to mills in the Southeastern States. 6/ About 90 percent of shipments to port destinations originate in the Southwest and the West. U.S. cotton is exported mainly from ports in Louisiana, Texas, and California.

Except in the Southeast, the volume of cotton hauled by rail greatly exceeds the volume transported by trucks. Approximately 78 to 80 percent of the cotton originating in the other three areas was moved by rail in 1961/62. 7/ After World War II, rail freight rates for cotton increased sharply to a peak in the midfifties. By the midsixties, they had declined to the lowest level since the early fifties.

Marketing Agencies and Practices

Local markets: The chain of ownership transfers begins when the producer sells his cotton or pledges it as collateral for a loan from the Commodity Credit Corporation (figure 2). 8/ In some parts of the Cotton Belt, ginners and local merchants are important buyers. In addition, several of the large textile mills have salaried or commission buyers in central and local markets. Some growers employ a broker to sell their cotton. Farmer cooperatives are increasing in importance in some areas, marketing producers' cotton directly to domestic and foreign mills, or securing a Government loan on it for their members.

Prices in almost all sales by producers and Government loan rates are based on the grade, staple length, and micronaire reading of each bale. The U.S. Department of Agriculture provides a quality classification service--at no charge to growers who qualify for the service as members of cotton improvement associations--through its Cotton Classing Offices throughout the Belt. Cotton is classed by grade, staple length, and mike reading on the basis of a sample taken from each bale, usually at the warehouse or gin. Beginning with the 1966 crop, the mike reading, along with a grade and staple,

6/ Potter, J. R., Jr., and Pritchard, D. L., The Traffic Pattern of Raw Cotton Shipped from Warehouses in the United States, 1961/62, U.S. Dept. Agr., ERS-184, May 1964.

7/ Potter, J. R., Jr., The Traffic Pattern of American Raw Cotton Shipments, Season 1961/62, U.S. Dept. Agr., Mktg. Res. Rpt. 704, April 1965.

8/ Pledging cotton as collateral on a Government loan is not, in a strict sense, transferring ownership. The producer has the option of repaying his loan and selling the cotton before the end of the marketing year, July 31, or leaving it in the loan and letting the Government take title to it on August 1.

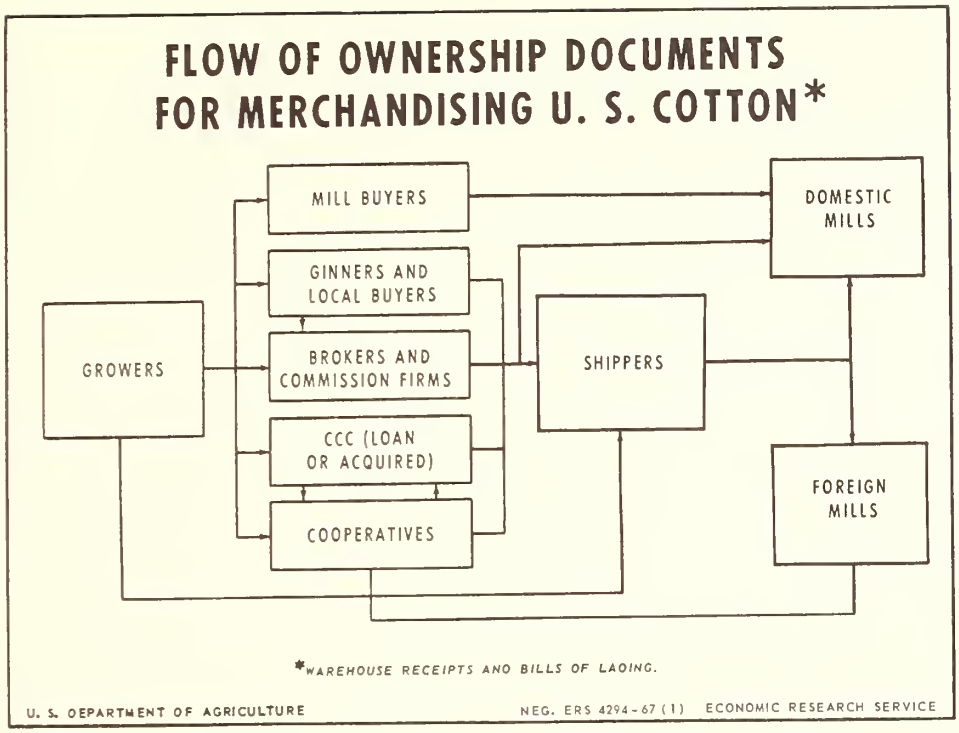


Figure 2

was provided by Cotton Classing Offices. The mike reading is a measure of fiber fineness and maturity in combination, an important quality attribute of spinning performance and end-use value. This reading has rapidly become an important element in pricing cotton.9/

Central markets: Central market firms may be classified as shippers, merchants, mill buyers, commission buyers, and brokers, depending on functions performed and methods of operation. Some of these produce, gin, and store cotton and process cotton seed, but many engage only in buying and selling cotton. Since the early fifties many of them have adjusted to changing marketing conditions by diversifying their operations.

Central market firms operating as shippers link the farm producer and the mill consumer of raw cotton. These firms buy baled cotton in lots of mixed qualities as near the points of growth and as soon after it enters marketing channels as practicable. Bales are then concentrated and stored at locations that provide economical distribution. In selling, shippers generally arrange for, and pay the costs of, transportation. Most of the costs and risks associated with other marketing services--including assembly, sampling, quality classification, storage, price risks, and selling--are also assumed by shippers.

Brokers, merchants, and commission buyers function chiefly in aiding cotton shippers acquire or sell cotton. Brokers sell on commission for producers, local market buyers and other types of owners. Commission buyers purchase cotton mainly for shippers and mills, mostly from growers, ginners, and local buyers. Local merchants, who buy cotton in local markets or at gin points, resell in mixed lots within a short time to shippers or mill buying agencies in nearby central markets.

The need for services provided by shippers, brokers, local merchants, and commission buyers declined during the past decade; consequently, their number dropped

9/ Cooper, M. R., and Harris, W. F., Recent Developments in Testing and Pricing Cotton for Fineness and Strength. U.S. Dept. Agr., Mktg. Res. Rpt. 699, Jan. 1965.

considerably. Considerable quantities of cotton which once they would have handled, now move directly into Government loan or are purchased directly by mill buyers.

Cooperative marketing associations in many areas of the Cotton Belt act as shippers for their producer members. The rapid increase in volume handled by these organizations also no doubt contributed to the decline in the number of shippers, brokers, merchants, and other types of central market firms.

Total merchandising costs of U.S. cotton shippers averaged $13.56 per bale in the midsixties, compared with $12.70 in 1955/56. Transportation accounted for about a third of the total costs of marketing cotton to domestic mills and for about half the cost of marketing cotton to overseas outlets.

Recent Trends and Prospects

A significant change affecting the cotton marketing system is the practice of direct buying by textile mills. Some mills maintain their own buying offices in major central markets, and other purchase cotton through commission buyers. Recently, a few textile firms have integrated beyond central and local market levels by purchasing cotton directly from producers of producer agents. Although no data are available, market observers state that these direct purchases fluctuated widely during the late 1950s and early 1960s, and then rose sharply in the 1964 season and even more sharply during the 1965 and 1966 seasons. A major cause of this development has been the necessity for buyers to be increasingly selective in purchasing cotton to meet mill requirements. By buying directly from producers, mills can specify gin drying and cleaning practices to meet their particular needs and reportedly obtain better performing cotton than through traditional marketing channels.

The need for such specifications arose mainly from the rapid adoption of machines for harvesting cotton and the resulting increase in roughly harvested seed cotton. During the last decade, when the proportion of crops harvested mechanically increased from about one-fifth to four-fifths, mills had increasing difficulties with the spinnability of cotton.

Accompanying the increase in mechanical harvesting was an increase in the quantity of cotton classed in the lower grades. As a result, price differentials between lower and higher grades widened. Because of grower dissatisfaction with this development, ginning engineers developed drying and cleaning equipment to reduce the trash in ginned lint, thereby improving its grade. Grade improvement, as measured by the absence of foreign material in lint, could be achieved, but staple length and other fiber properties were adversely affected.

A recent technological development may provide a means for reducing the importance of foreign matter in lint. With the recently introduced crusher rolls in cotton textile manufacturing, it may be possible to de-emphasize trash removal at the producer-ginner level. Crusher rolls pulverized the trash in the card web and reportedly greatly reduce its adverse effects in subsequent steps of manufacturing. Thus, mills may be able profitably to use trashier bales of cotton which have been subjected to only a minimum of gin drying and cleaning, and retain their original length and other valuable spinning properties. This new development is a partial explanation of the rapid increase in mill-producer contracts for cotton ginned with a minimum of conditioning.

Manufacturing Cotton Textile Products

The Industrial Revolution began with the introduction of power-driven machinery in the manufacture of cotton textiles late in the eighteenth century. Today the manufacturing of textile products is one of the largest industries in this country in terms of both employment and value of output. For some years, technological progress lagged in this industry, but in recent years it has made great strides in modernizing plant and equipment and developing new products.

The industry converts raw cotton into the form demanded by ultimate consumers--a task that involves numerous manufacturing processes and changes in ownership. These processes include making yarn and cloth, finishing cloth, and making consumer items from the finished cloth. Firms performing these processes are generally known as textile mills, finishing plants, and cutters, respectively. Ownership of textile products generally moves in the following order: Mills, converters, cutters, wholesalers, retailers, and consumers (figure 3).

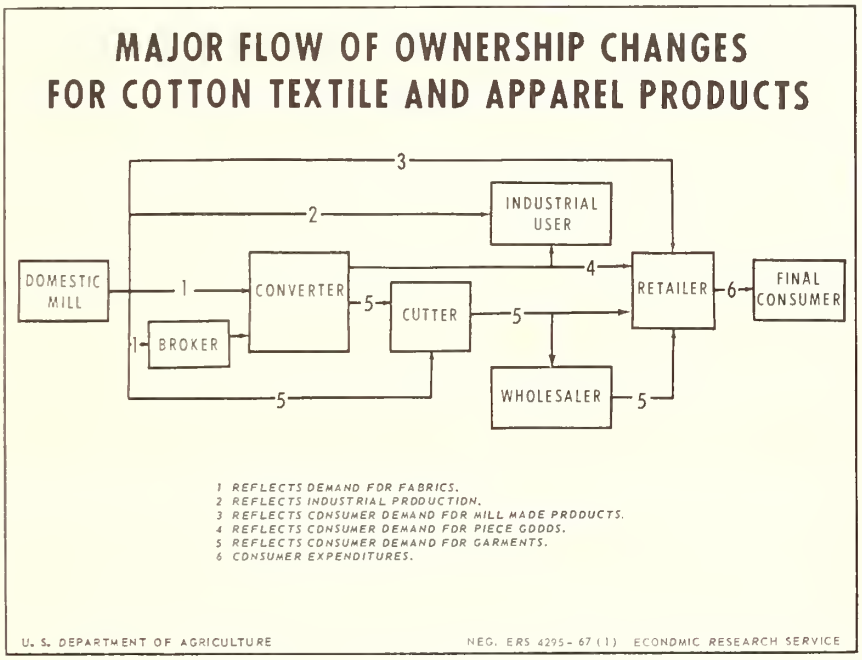


Figure 3

Textile Mills

Textile mills that spin yarn and weave or knit fabrics compose the largest part of the entire textile industry. 10/ Yarn (spinning) mills and cotton weaving mills are the initial processors of about 95 percent of all cotton utilized by American manufacturing industries (table 4).

10/ This section is concerned mostly with establishments in the following Standard Industrial Classifications: Broad Woven Fabric Mills, Cotton (SIC-2211), Yarn Mills, except Wool (SIC-2281), Knitting Mills (SIC-225), and Finishers of Broad Woven Fabrics of Cotton (SIC-2261). The Textile Mill Products group, for which data are reported in the Census of Manufactures, includes several other industries.

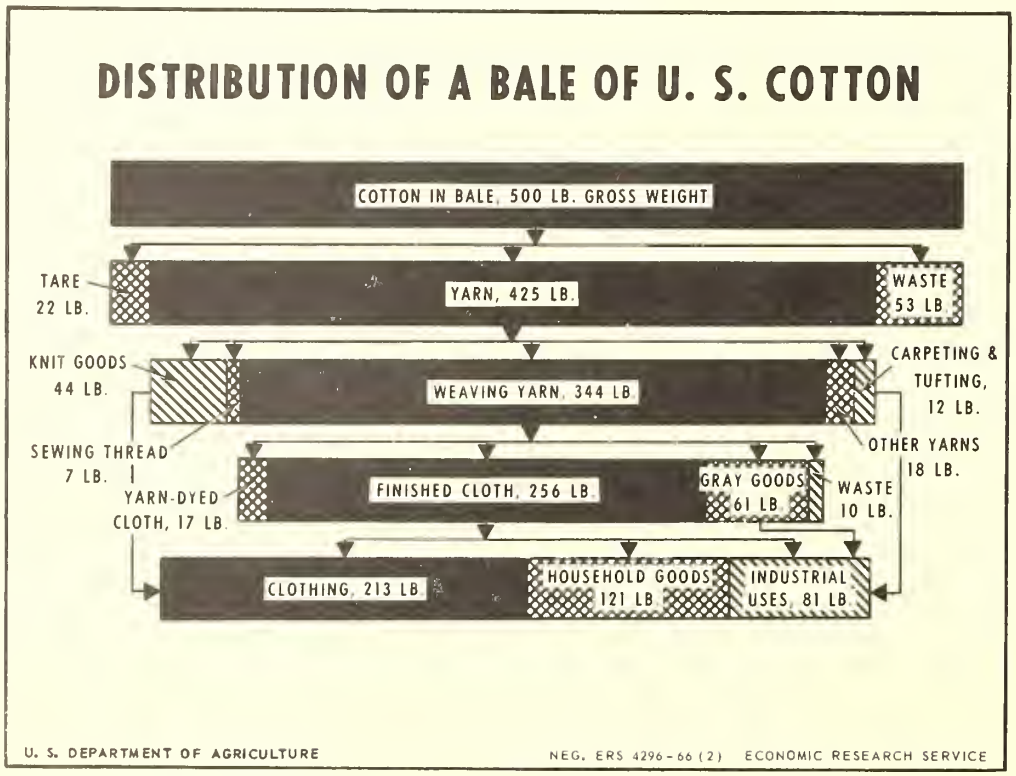
Table 4.--Utilization of raw cotton by manufacturing industries, 1958 and 1963

Industry	1958		1963	
	Bales 1/	Percent	Bales 1/	Percent
Yarn mills	1,835,431	22.6	1,899,157	22.5
Weaving mills (cotton)	5,911,290	72.7	6,149,437	72.9
Weaving mills (synthetic)	119,807	1.5	193,939	2.3
Thread mills	92,315	1.1	74,695	.9
All others	172,913	2.1	118,358	1.4
Total	8,131,756	100.0	8,435,586	100.0

1/ 500 lb. gross weight.

Compiled from Census of Manufactures, 1963 and 1958.

On the average, about 15 percent of a 500-pound bale of cotton is waste and tare (bagging and ties), and 85 percent is made into yarn (figure 4). In 1958, the last year for which data are available, about 81 percent of the yarn was woven into cloth, 10 percent went to knitting mills, and the remainder into carpet and tufting yarns, threads, and other uses. 11/


DISTRIBUTION OF A BALE OF U. S. COTTON
COTTON IN BALE, 500 LB. GROSS WEIGHT
TARE 22 LB.
YARN, 425 LB.
WASTE 53 LB.
KNIT GOODS 44 LB.
WEAVING YARN, 344 LB.
CARPETING & TUFTING, 12 LB.
SEWING THREAD 7 LB.
YARN-DYED CLOTH, 17 LB.
FINISHED CLOTH, 256 LB.
GRAY GOODS 61 LB.
WASTE 10 LB.
OTHER YARNS 18 LB.
CLOTHING, 213 LB.
HOUSEHOLD GOODS 121 LB.
INDUSTRIAL USES, 81 LB.
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NEG. ERS 4296-66 (2) ECONOMIC RESEARCH SERVICE

Figure 4

11/ Howell, L. D., The American Textile Industry--Competition, Structure, Facilities, Costs. U.S. Dept. Agr., Econ. Rpt. 58, Nov. 1964.

Since cotton is spun into yarn before it is woven into cloth or used to fabricate knit products, the number of spinning spindles in place and the number of hours operated are good indications of the size and activity of the cotton textile industry. Because of the integrated nature of the industry, spindles operate in other than yarn mills only. They are in weaving mills, thread mills, and other textile mills as well.

The number of spindles in place declined by about 7 percent from 1958 to 1966, but the number of active spindles declined only about 1 percent (table 5). Offsetting this decline was an increase in the average number of hours that each active spindle operated. As a result, total hours operated increased to 2.4 billion per week in 1966 from 2.1 billion in 1958. Moreover, the speed at which spindles operated increased. However, the percentage of active spindles operating on 100-percent cotton declined. By 1963 this percentage had dropped to 78 percent from 91 percent in 1958 as a result of increased use of man-made fibers.

Number of mills and companies: The number of yarn and weaving mills has declined in recent years (table 6). In 1963, there were 11 percent fewer yarn mills than in 1958 and 18 percent fewer mills weaving cotton broad-woven fabrics. In percentage terms, decreases were largest among mills having fewer than 100 employees, especially among those with fewer than 20 employees. The number of companies controlling yarn and weaving mills also declined. Because of mergers and acquisitions, rates of decline were greater for companies than for mills (table 6).

Technological change has been a major cause of the decrease in number of mills. In recent years, productivity of textile machinery has been improved so much that mills with older machinery are finding it difficult to compete successfully with newer mills. Further, installation of this machinery in some older mills has not been feasible. Also better designed floor layouts and materials handling equipment in newer plants have added to production efficiency.

Table 5.--Cotton system spindle activity, 1958-66

Period	Spindles		Hours operated per active spindle	Percentage of spindles active on	
	In place	Active		100 % cotton	Other fibers
	Thousands	Thousands	Hours	Percent	Percent
1958	20,845	19,241	5,755	91.0	9.0
1959	20,274	19,248	6,166	91.4	8.6
1960	19,956	19,222	6,453	91.2	8.8
1961	19,602	18,985	6,019	91.0	9.0
1962	19,491	18,764	6,527	89.4	10.6
1963	19,302	18,634	6,292	84.2	15.8
1964	19,322	18,757	6,530	82.6	17.4
1965	19,332	18,757	6,687	80.1	19.9
1966 1/	19,456	19,065	6,447	77.8	22.2

1/ 11-month average.

Bureau of the Census.

Table 6.--Textile mill industries: Number of companies, establishments by geographic region, and selected employment data, 1954, 1958, and 1963

Geographic region and item	Yarn mills, except wool			Weaving mills, cotton			Knitting mills 1/		
	1954 2/	1958	1963	1954	1958	1963	1954	1958	1963
Companies	---	268	234	413	325	229	3/1,545	1,653	1,852
Establishments:									
New England	---	31	19	67	51	24	140	123	120
Middle Atlantic	---	34	17	107	87	50	1,766	1,572	1,590
South Atlantic 4/	---	246	235	319	274	267	730	752	789
North Carolina	---	188	180	102	74	70	529	570	641
South Carolina	---	18	21	126	120	117	27	29	31
Georgia	---	37	33	77	70	70	69	68	49
East South Central	---	32	34	46	42	36	160	137	102
Other	---	13	12	43	42	30	249	202	247
Total	---	356	317	582	496	407	3,045	2,786	2,848
Establishments with employment of:									
Less than 20	---	46	33	106	101	57	1,332	1,082	1,184
20-99	---	76	71	68	52	43	1,168	1,170	1,127
100 or more	---	234	213	408	343	307	545	534	537
Total employment	---	67,836	61,647	280,546	228,609	208,993	221,361	214,549	220,486
Employees per establishment	---	191	194	482	461	513	73	77	77

1/ Includes mills knitting outerwear, underwear, fabric, hosiery, and products not elsewhere classified.
2/ Because of changes in industry classification, data for 1954 are not strictly comparable with those for later years.
3/ Excludes hosiery manufacturers, and knitting mills not elsewhere classified.
4/ Total includes mills in States other than the 3 shown below.

Compiled from Census of Manufactures, 1963, 1958, and 1954.

Some companies quit or merged because they lacked the financial resources to build new mills and couldn't compete successfully with companies having newer mills. When companies merged, production often was concentrated in the larger and more efficient plants.

In contrast to the spinning and weaving industries, in the knitting industry the number of companies has increased. Twelve percent more companies were in operation in 1963 than in 1958 and 20 percent more than in 1954. Also the number of knitting mills was slightly larger in 1963 than in 1958, although it was about 6 percent smaller than in 1954. Most of the increase from 1958 to 1963 was among mills having fewer than 20 employees. Output increased more for knitting mills than for yarn and weaving mills (table 7).

Increase in size of mills: In the spinning and weaving industries, an increase in average capacity per plant in recent years is indicated by the decrease in number of mills while total output of the primary products of these mills increased (table 7). Also, employment per mill increased although total employment decreased (table 6). Output could be maintained with fewer mills and fewer employees mainly because new mills generally were more productive than those that were closed. The number of machines required to produce a given output decreased along with the number of employees required to run them. For example, the number of looms in mills weaving cotton broadwoven cloth declined almost 10 percent from 1958 to 1963, and total employment in these mills decreased 9 percent although output of this product increased slightly (tables 6 and 7).

Shift in location: A major migration of the cotton textile industry from New England to the Southern States started in the twenties. Lower taxes, plentiful labor supplies, adequate water power in the South and closeness to raw materials were factors contributing to this shift. 12/ Today, over two-thirds of all spinning of yarn and weaving of fabrics are concentrated in the South.

Table 7.--Production of primary textile products, 1954, 1958, and 1963 1/

Product	Production (1954 = 100)		
	1954	1958	1963
Yarn Mills: 2/			
Spun cotton and man-made fiber yarns	100	121	169
Weaving mills: 3/			
Cotton broad woven fabrics	100	102	108
Knitting mills:			
Hosiery	100	115	140
Knit underwear and nightwear made by knitting mills	100	118	163
Knit fabrics	100	136	225

1/ Indexes of production of primary products of designated industries; production, however, includes that in establishments outside as well as in the industry. For example, production of yarn includes that in weaving mills.
2/ Yarn spinning mills, cotton, man-made fibers, and silk.
3/ Broadwoven fabric mills, cotton.
Compiled from Census of Manufacturers, 1963.

12/ Backman, Jules, and Gainsbrugh, M. R., Economics of the Cotton Textile Industry, National Industrial Conference Board, 1946.

Of the 317 yarn mills in 1963, 235 were located in the South Atlantic States and about 77 percent of these were located in North Carolina (table 6). The small geographic shift since 1958, like the long-term movement, has been from the Northeast to the South. Weaving mills experienced a more rapid shift in location from New England and the Middle Atlantic States to the Southern States, especially during 1958-63, when the proportion of the total number of weaving mills in the Southern area increased from about 55 percent to 66 percent.

Movement to the South has been much less marked for the knitting industry than for the cotton spinning and weaving industries. In 1963, 56 percent of all knitting mills were located in the Middle Atlantic States, about the same proportion as in 1958 and 1954. About 28 percent were in the South Atlantic States, compared with 27 percent in 1958 and 24 percent in 1954. Of those in the South Atlantic region in 1963, 81 percent were located in North Carolina.

Integration of production: Many textile firms have combined 2 or more stages in the manufacture and distribution of products under one management (vertical integration). These may include: (1) spinning and weaving, (2) weaving and finishing, (3) spinning, weaving, and finishing, (4) finishing and fabricating products, (5) fabricating and wholesaling, or (6) fabricating, wholesaling and retailing. Most of the largest companies in the textile industry fall into the group combining spinning, weaving, and finishing. Some of these large integrated companies produce some finished consumer items. A few companies combine all stages from spinning through retailing. Companies may have different mills for different functions or they may combine 2 or more functions in 1 mill. In 1963, more than 74 percent of the total production of spun cotton yarn was consumed in the same establishment in which it was produced. The remainder was sold mainly to small weaving mills without spinning equipment, to knitting mills, narrow fabric mills, thread mills, and other users.
woven fabric mills bought 72 percent of the cotton purchased by all

Integrated broadwoven fabric mills bought 72 percent of the cotton purchased by all manufacturing industries in 1963, and produced yarn, as well as weaving broadwoven fabrics. Grey goods made up the major part of their production, but they also accounted for a large part of the finished fabric. They sold finished fabric to apparel and other manufacturers or used it in fabricating sheets, pillowcases, towels, and similar consumer items. In 1963, almost 51 percent of the total production of finished cotton broadwoven goods was produced in weaving mills, and about 43 percent of this was consumed in the same establishment. Partly because many mills are highly diversified, the cotton broadwoven fabric weaving mills accounted for 20 percent of the total value of shipments for the entire textile mill products industry. 13/

Similarly, some knitting mills manufacture the yarns they use in knitting. Some mills knit fabrics and also dye and finish them, and some manufacture outerwear, underwear, and nightwear from fabrics they have knitted in the same establishments. 14/

Companies have integrated production to insure an uninterrupted supply of suitable raw materials, and to come in closer contact with buyers further along in the marketing channel. This has made it feasible for some companies to develop and promote branded products. Further, integration usually means spreading some overhead costs over more units of production.

Converters and Finishing Plants

Converters are the major intermediary between producers of unfinished cloth (mills) and users of finished cloth (garment makers and industrial users). Their

13/ Census of Manufactures, 1963
14/ See publication cited in footnote 11.

prime function is to buy unfinished cloth from the most favorable mill source, move it through finishing plants, which bleach, dye, print or otherwise finish the cloth. Converters handle the bulk of the unfinished cloth. Thus, they hold a key position in textile marketing.

Most finishing plants do not take title to the cloth they process. Their major function is to finish cloth to order for converters. The particular method of finishing may vary somewhat for different products and plants and is necessarily influenced by the construction and physical characteristics of the textiles handled. Chemical finishings for water repellency, fire resistance, and mildew proofing also are included. All treatments or processing received by textiles to fit them for consumers' use, after their physical structure has been completed, are included in the general field of finishing.

Number, size, and location of plants: The number of plants finishing mainly cotton broadwoven fabrics has declined along with the number of companies operating them. From 1958 to 1963, both declined by about 50 percent (table 8). 15/ The decline was largest in percentage terms among smaller plants. Even though total employment decreased, the proportion of plants with more than 20 employees increased to 59 percent in 1963 from 39 percent in 1958. Average employment per plant also increased, rising from 110 employees in 1958 to 117 in 1963. In contrast to the declining number of plants and employees, total production of finished cotton textile products increased moderately.

About two-thirds of the finishing plants were located in the New England and Middle Atlantic States in 1963 (table 8). However, the percentage in the Middle Atlantic States decreased between 1958 and 1963 and percentages in the New England, South Atlantic and South Central States increased.

Converters and finishers tend to locate near the principal market outlets for finished textiles--namely manufacturers of apparel and house-furnishings. Garment manufacturers--known as cutters in the textile trade--are the largest purchasers of finished cloth from converters. However, some finished cloth in the form of piece goods moves directly from converters to retail outlets. Converters also sell sizable quantities of finished cloth to industrial users.

Integration of production: The finishing of textiles, to a great extent, is performed in establishments not classified as finishing plants. This is shown by census data. In 1963, approximately 40 percent of the total value of shipments of finished cotton textiles except knit goods from all industries was accounted for by establishments other than those classified as finishing plants. These establishments included yarn mills, weaving mills, and fabricators of apparel and related products. Weaving mills alone accounted for about 36 percent of the total value of shipments of finished cotton textiles in 1963. A large portion of finished textiles are produced and utilized in the same establishment. In 1963, over 37 percent of the total production of finished cotton broadwoven fabrics was consumed in the same establishments where it was produced. 16/

15/ Establishments in which cloth is finished make up a segment of the textile mill products industry. However, the Bureau of the Census classifies establishments of converters in wholesale trade. Establishments that spin, weave, knit, or fabricate as well as finish are classified on the basis of the former operations rather than as finishing plants.

16/ Census of Manufactures, 1963.

Table 8.--Cotton finishing plants: Number of companies, establishments by geographic region, and selected employment data, 1958 and 1963

Geographic region and item	1958	1963	Percentage of total		Change: 1963 from 1958
			1958	1963	
	Number	Number	Percent	Percent	Percent
Companies	426	220	---	---	-48.4
Establishments:					
New England	80	49	17.9	20.6	---
Middle Atlantic	247	104	55.4	43.7	---
South Atlantic	59	46	13.2	19.3	---
North Central	25	16	5.6	6.7	---
South Central	13	12	2.9	5.1	---
Mountain	2	2	.5	.8	---
Pacific	20	9	4.5	3.8	---
Total	446	238	100.0	100.0	-46.6
Total employment	49,212	42,055	---	---	-14.5
Employees per establishment	110	177	---	---	60.9
	Percent	Percent			
Proportion of establishments with 20 or more employees	39	59			

Compiled from Census of Manufactures, 1963.

The Apparel Industry 17/

Firms in the apparel industry are frequently called cutters. These firms buy finished fabrics from converters, finishers, or textile mills. They manufacture apparel items such as coats, trousers, dresses, shirts, and hats, and sell the finished products. Firms that buy fabrics and manufacture apparel are known as "manufacturers." Firms known as "jobbers" mainly buy raw materials, arrange for their manufacture in plants operated by others (contractors), and sell the finished products. Some jobbers do the cutting of the materials in their own establishments. "Contractor" firms process materials owned by others.

17/ This section is concerned mainly with establishments in the following Standard Industrial Classifications: Men's and Boys' Suits and Coats (SIC-2311), Men's and Boys' Furnishings (SIC-232), Women's and Misses' Outerwear (SIC-233), Women's Undergarments (SIC-234), Headwear (SIC-235), Children's Outerwear (SIC-236). Data for these have been combined to form two larger groups: Men's and Boys' Apparel and Women's and Children's Apparel. The Apparel and Related Products Group for which data are reported in the Census of Manufactures includes three other Standard Industrial Classifications: Fur Goods (SIC-2371), Miscellaneous Apparel (SIC-238), and Fabricated Textiles, nec. (SIC-239).

Number of establishments and companies: The apparel industry is composed, for the most part, of many small firms with little capital, producing numerous styles, sizes, and types of clothing, usually in small lots. Of the 17,978 establishments in the men's and boys' apparel and women's and children's apparel industries in 1963, 41 percent had fewer than 20 employees, and 85 percent had fewer than 100 employees (table 9).

The number of establishments declined 9 percent in the men's and boys' apparel industry from 1958 to 1963 and 5 percent in the women's and children's apparel industry (table 9). Accompanying decreases in numbers of companies in these industries were 12 percent and 6 percent, respectively. Reductions in establishment numbers occurred among those having fewer than 100 employees. Most of the apparel manufacturing firms operate only a single establishment. However, multiunit firms have increased in number.

Size of establishments: Physical output per establishment in the apparel manufacturing industries apparently has increased in recent years. According to the Federal Reserve Board index, production of apparel products increased about 32 percent from 1958 to 1963, when the number of plants was decreasing. Also the average number of employees per establishment increased 19 percent for establishments manufacturing men's and boys' apparel and 15 percent for those producing women's and children's apparel. Establishments with 100 or more employees increased in number from 1958 to 1963. Total employment in apparel manufacturing establishments increased, in contrast to trends in most of the textile mill products industries.

Location of establishments: The apparel industries are more widely dispersed geographically than the textile mill industries.

In the men's and boys' apparel industry, 47 percent of the establishments were located in the Middle Atlantic States in 1963, compared with 51 percent in 1958 (table 9). The number of plants located in the Southern States increased between 1958 and 1963. The number in each of the other regions declined.

In the women's and children's apparel industries, the number of plants increased in the Southern and Pacific States. The number in each of the other regions declined. The Middle Atlantic States had 69 percent of the total in 1963 compared with 71 percent in 1958.

Integration of production: Vertical integration by apparel manufacturers usually takes the form of a forward combination with distributors of fabricated products. Most manufacturers sell fabricated products directly to retailers as well as to wholesalers; others sell only to wholesalers and jobbers. An increasing volume of apparel products is being distributed through manufacturers' sales branches and offices directly to retailers.

Increasing quantities of apparel and related products are being produced in textile mills. This is particularly true of men's and boys' knit underwear. In 1963, knitting mills produced 62 percent of the total value of shipments of men's and boys' underwear; 31 percent was produced from purchased knit fabrics by industries classified as manufacturers of men's and boys' underwear, and the remainder was produced by other apparel manufacturers. 18/

18/ Census of Manufactures, 1963.

Table 9.--Manufacturers of apparel: Number of companies, establishments by geographic region, and selected employment data, 1958 and 1963

Geographic region and item	Men's and boys' apparel 1/		Women's and children's apparel 2/		Total	
	1958	1963	1958	1963	1958	1963
Companies	4,076	3,595	14,134	13,339	18,210	16,934
Establishments:						
New England	294	259	928	844	1,222	1,103
Middle Atlantic	2,270	1,906	10,364	9,514	12,634	11,420
South Atlantic	523	555	608	781	1,131	1,336
North Central	552	480	920	783	1,472	1,263
South Central	470	525	423	483	893	1,008
Pacific	346	338	1,269	1,419	1,615	1,757
Other	30	32	61	59	91	91
Total	4,485	4,095	14,573	13,883	19,058	17,978
Establishments with employment of:						
Less than 20	1,845	1,573	6,510	5,883	8,355	7,456
20-99	1,508	1,281	6,897	6,589	8,405	7,870
100 or more	1,132	1,241	1,166	1,411	2,298	2,652
Total employment	393,728	428,583	588,175	632,008	981,903	1,060,591
Employees per establishment	88	105	40	46	52	59

1/ Includes manufacturers of men's and boys' suits, coats, dress shirts, nightwear, underwear, neckwear, trousers, work clothing, and clothing not elsewhere classified.

2/ Includes manufacturers of women's, misses', and children's outerwear, underwear, dresses, blouses, coats and suits, headwear, women's corsets and allied garments, and outerwear not elsewhere classified.

Compiled from Census of Manufactures, 1963 and 1958.

Concentration in the Textile and Apparel Industries

The atomistic nature of the yarn manufacturing industry is shown by the fact that in 1963 the 4 largest yarn mill companies accounted for only 17 percent of the total value of shipments by all companies in the industry (table 10). In the weaving mill industry, the 4 largest companies were responsible for almost a third of the total value of shipments by all companies in the industry and the 20 largest for two-thirds of the total. Concentration in the weaving industry has increased considerably since 1954.

Similar data show a wide variation in concentration among individual industries manufacturing knit-goods. The share of the total value of shipments made by the 4 largest companies ranged from 34 percent for miscellaneous knit-goods manufacturing to 11 percent for knit outerwear manufacturing.

For industries finishing cotton textiles, except knit-goods, the 4 largest companies--or less than 2 percent of the total--accounted for 45 percent of the total value of shipments in 1963 (table 10). The 50 largest companies controlled most of the total industry activity. They accounted for 92 percent of the total value of shipments, employed 87 percent of the workers, and accounted for 88 percent of the value added by manufacture. Data for years before 1963 are not available. It is likely that there has been a trend towards greater industry concentration, as the number of companies decreased 48 percent from 1958 to 1963, although the value of shipments went up 27 percent.

Apparel companies range from small, family firms to large corporations controlling many establishments. Some produce only a few standard items; others produce a complete line of merchandise. The degree of concentration among the various apparel industries varies widely, depending on the type of product produced and the number of companies in the industry. In the industry manufacturing women's dresses--the apparel industry with the largest number of companies--the 20 largest companies accounted for 14 percent of the total value of shipments in 1963 (table 10). At the other extreme, the 20 largest companies accounted for 86 percent of the total value of shipments by the men's and boys' underwear industry--the industry with the smallest number of companies.

Expenditures for Plants and Equipment

Annual expenditures for new plant and equipment by firms in the Textile Mill Products Industry Group (includes all industries engaged in textile manufacturing, but excludes apparel industries) have increased each year since 1958 except in 1961. Increases have been particularly sharp since 1964. Textile mill firms have estimated their 1966 expenditures at $1.2 billion, over 4 times that in 1958. 19/ After large expenditures for plants and equipment following World War II, textile mill companies reduced such outlays rapidly; in 1958 they totaled only $288 million.

Data on 1958 and 1963 expenditures for plant and equipment by individual industries are available from the Census of Manufactures (table 11).

In the Textile Mill Products Group, increases in expenditures for new plant and equipment by companies in the yarn mill and weaving mill industries far outpaced those by knitting mill and finishing companies. For the first 2 of these industries, expenditures for structures and additions increased by considerably larger percentages than those for machinery and equipment. However, in all industries dollar expenditures were much larger for machinery and equipment. The marked improvement in spinning and weaving mill structures accounted for the more rapid increase in expenditures for all structures.

19/ Data from Securities and Exchange Commission and Department of Commerce.

Table 10.--Textile and apparel manufacturing industries: Number of companies, value of shipments and share of total shipments accounted for by largest companies, 1963, 1958, and 1954

Industry and year	Companies	Value of shipments	Concentration ratio: Percentage of value of shipments accounted for by--			
			4 largest companies	8 largest companies	20 largest companies	50 largest companies
	Number	1,000 dollars	Percent	Percent	Percent	Percent
Yarn mills, except wool:						
1963 1/	234	1,067,043	17	27	46	68
Weaving mills, cotton:						
1963	229	3,104,053	30	46	67	87
1958	321	2,719,432	25	40	59	79
1954	413	2,789,621	18	29	49	---
Finishing plants, cotton:						
1963 1/	2/220	869,746	45	59	77	92
Men's and boy's underwear:						
1963	65	134,949	42	59	86	99
1958	79	100,238	30	46	79	88
Men's and boy's suits and coats:						
1963	1,031	1,526,019	14	23	38	56
1958	1,275	1,260,920	11	19	32	49
Women's blouses:						
1963	1,130	610,185	11	15	27	44
1958	1,222	414,649	10	14	24	39
Women's dresses:						
1963 1/	4,577	2,410,972	6	9	14	23

1/ Data for years before 1963 not available because of changes in industry definitions.

Compiled from U.S. Bureau of the Census, 1966, Concentration Ratios in Manufacturing Industries, 1963.

Table 11.--Expenditures for new plant and equipment by selected textile and apparel industries, 1958 and 1963

Industry and item	Expenditures in--		Change: 1963 from 1958
	1958	1963	
	1,000 dollars	1,000 dollars	Percent
Textile mills			
Yarn mills, except wool:			
Structures and additions	1,715	4,454	159.7
Machinery and equipment	13,792	30,252	119.3
Total	15,507	34,706	123.8
Weaving mills, cotton:			
Structures and additions	6,775	22,230	228.1
Machinery and equipment	41,666	91,136	118.7
Total	48,441	113,366	134.0
Knitting mills (all industries):			
Structures and additions	7,282	10,794	48.2
Machinery and equipment	36,336	52,374	44.1
Total	43,618	63,168	44.8
Finishing plants			
Structures and additions	2,884	4,075	41.3
Machinery and equipment	12,778	25,198	97.2
Total	15,662	29,273	86.9
Apparel manufacturers			
Men's and boys' apparel 1/:			
Structures and additions	6,054	7,327	21.0
Machinery and equipment	15,812	24,834	57.1
Total	21,866	32,161	47.1
Women's and children's apparel 2/:			
Structures and additions	10,236	13,733	34.2
Machinery and equipment	27,624	42,493	53.8
Total	37,860	56,226	48.5

1/ See table 9, footnote 1.
2/ See table 9, footnote 2.

Compiled from Census of Manufactures, 1963 and 1958.

Expenditures for plant and equipment by companies manufacturing men's and boys' and women's and children's apparel increased less than those by textile mill products companies. However, increases made by the apparel manufacturing companies were substantial. A principal reason for the lag in their expenditures was that technological developments have been slower in the apparel industries.

Several developments contributed to the rise in expenditures for plant and equipment. Outstanding among these were the marked improvements in plant and equipment in the textile industries. Companies built new plants and installed modern equipment to offset the effect of rising wage rates on their costs and to help them compete more effectively with foreign producers. Further, manufacture of some new products required new equipment. Enlarged financial resources as a result of mergers, improvements in profits, and increased depreciation allowances enabled companies to increase expenditures. Another factor was the increased consumer demand for apparel and textile products.

Major factors stimulating capital expenditures were (1) shortening by the Treasury of the service lives that could be used in calculating depreciation allowances for machinery and equipment for Federal income tax purposes, effective July, 1962, and (2) enactment of legislation in 1962 granting 7 percent tax credit allowances on outlays for new equipment. However, the Congress recently set aside this 7 percent tax credit through 1967 (with certain exceptions) to help ease inflationary pressures on the economy. Accelerated depreciation of buildings, allowed by the Revenue Act of 1954, was also suspended (also with certain exceptions). These expenditures are expected to decline moderately partly as a result of this legislation.

Profits in the Textile and Apparel Industries

Profits of corporations in the textile and apparel industries characteristically have been considerably lower than the average for all manufacturing corporations. However, in recent years profits in these industries have risen more rapidly than the average. According to the joint reports of the Federal Trade Commission and the Securities and Exchange Commission, after-tax profits of corporations in the textile mill products industry during the 10 years, 1956-65, fluctuated between a low of 1.6 percent of sales in 1958 and a high of 3.8 in 1965. In the apparel industry the low for the same period was 1.0 percent in 1958 and the high was 2.3 percent in 1965. As a percentage of stockholders' equity, profits after taxes varied from 3.5 percent in 1958 to 10.9 percent in 1965 in the textile-mill products industry, and from 5.0 percent in 1958 to 12.8 percent in 1965 in the apparel industry. In the first 3 quarters of 1966, profits in the textile industry were about the same as a year earlier; those in the apparel industry were up slightly.

Recent Trends and Prospects 20/

In the past, the textile industry has been slow to accept change. Recently, however, it has made many innovations. Perhaps one of the most significant changes was that the industry has now become a market-oriented, multifibered industry, attuned to the demands of a critical consuming public.

One of the most dramatic changes taking place in textile manufacturing is the modernization program. Plant and equipment expenditures have reached new highs (p.27). Expectations are that in the next 5 years annual investments in new plant and equipment generally will continue at high levels.

20/ Much of this section is condensed from U.S. Dept. of Labor, Bureau of Labor Statistics, Bul. No. 1474, Technological Trends in Major American Industries, Feb. 1966.

In addition to operating at faster speeds, some new machines being installed in textile mills integrate a number of separate operations into one large machine. This new equipment is a major factor in reducing unit labor requirements. New carding machines operate at more than 4 times the speed 10 years ago, drawing machines at 6 times the speed. Spindle speeds were 10,000 r.p.m. in 1950; today they are 13,500 r.p.m.; spindle speeds of 20,000 r.p.m. are now possible. Winding speeds are at least double those of 10 to 15 years ago. Conventional loom speeds increased 25 to 50 percent in the past 15 years, and shuttleless looms may soon double the speed of weaving. Multiple feeds have significantly increased machine output of hosiery and other knitting equipment. Carpets are now produced by high-speed tufting machinery, rather than by slower weaving process.

Apparel manufacturing will probably remain one of the least mechanized of the manufacturing industries. Most manufacturing operations involve the manual movement of a stack of garment parts through a series of individual operations that are performed mainly on manually operated machines. However, technological change is likely to be more rapid among large-scale firms producing standardized types of clothing, such as shirts, pajamas, underwear, work clothing, and similar staple goods. These firms are among the most mechanized in the industry and are expected to continue to adopt improved equipment to raise their productivity. One of the most significant recent developments--a unit for making complete shirt fronts--moves parts automatically between a number of different machines which combine positioning, thread cutting, assembling, and sewing operations. Another laborsaving machine that has been introduced recently is a unit for making complete dungaree pockets; it utilizes air jets to move precut parts through the machine and folds, lines, sews, and stacks the pockets automatically. Similar automatic equipment has been developed for making shirt cuffs and collar bands. Use of conveyors in warehouses is expected to increase. A number of large multiplant firms have set up centralized garment distribution centers, utilizing conveyorized warehouses, to increase efficiency in distributing plant output.

Employment in the textile mill products industry probably will continue to decline over the next 5 years, but at a moderate rate. Major factors responsible for this trend include declining exports, expanding imports, and changing technology. Continued increase in demand for textile products over the next 5 years may offset, to some extent, the effects of these factors. Employment in the apparel industry will probably continue to increase, since expanding demand for apparel is expected to outweigh productivity gains resulting from anticipated gradual changes in technology.

Research on cotton, will be expanded to strengthen its competitive position relative to synthetics. Recent legislation reducing cotton support prices to world market levels also is expected to strengthen cotton's competitive position.

Textile workers have benefitted in this era of expansion. Average hourly earnings amounted to $2.00 per hour in November 1966. This compares with $1.79 in 1964, $1.68 in 1962, and $1.12 in 1947-49. In the South today, the textile industry is competing for available labor with new industries, and there is actually a shortage of labor at current wage rates in the textile industry. In addition to higher wages, such "creature comforts" as air conditioning and well-lighted work areas with attractive colors are being used to attract and hold labor.

The consumer has benefitted from these developments in the textile field. The November 1966 Consumer Price Index for all items (food, housing, transportation, health, apparel, etc.) was 14.6 percent above the 1957-59 base while the index for apparel and upkeep increased 12.0 percent during the same period.

Wholesale textile prices also have lagged since the base period. The BLS index of wholesale prices of all industrial commodities stood at 105.4 (1957-59=100) in November, while the textile products and apparel price index was 102.1.

Distributing Finished Consumer Products

Textile products are distributed to consumers through several combinations of agencies. The traditional channel of distribution, especially in earlier years, was from manufacturers to wholesalers to retailers to consumers. However, in recent years the manufacture and distribution of textile products have been integrated to a considerably extent. A large portion of finished products go directly from manufacturers to retailers; in addition, a few large manufacturers producing finished consumer items distribute their products directly through their own retail stores.

Wholesaling Textile and Apparel Products 21/

Textile and apparel products are wholesaled through merchant wholesalers, manufacturers' sales branches and offices, and merchandise agents and brokers. Merchant wholesalers take title to the merchandise, buying from manufacturers and reselling principally to retail stores. Manufacturers' sales branches and offices usually are separate establishments maintained by manufacturers primarily for selling their own products. Merchandise agents and brokers buy and sell for others rather than for their own account.

The number of establishments operated by wholesale distributers of dry goods and apparel declined moderately between 1958 and 1963. Much of the decline was in establishments operated by merchandise agents and brokers. Many buyers and sellers now are bypassing these establishments. The number of manufacturers' sales branches and offices increased, as the larger textile and apparel manufactures integrated their operations to include the wholesaling function.

Almost 80 percent of total sales made by wholesalers of apparel and accessory items in 1963 were to retailers, about 13 percent to other wholesalers, and the remainder was sold to industrial, commercial and other users, to consumers, and for export.

About half of the sales of dry goods, piece goods, and notions made by wholesale establishments in 1963 were to industrial, commercial, and other users. Included were sales of yarn, grey goods, finished fabrics, and other textile materials to textile mills, and apparel manufacturers. About three-fourths of the volume sold by manufacturers' sales branches and offices and more than two-fifths of the agents' and brokers' volume went to industrial, commercial, and other users. Sales to other wholesalers accounted for 31 percent of total sales by wholesale establishments and sales to retailers for about 15 percent. The remainder was sold to consumers and for export.

Retail Outlets

Products of the textile and apparel manufacturing industries are distributed to American consumers mainly through more than 150,000 department stores, clothing specialty stores, and other general merchandise and apparel and accessory stores. Mail-order houses serve as another important market outlet for apparel products. Many small, independent general merchandise stores that sold clothing discontinued business between 1958 and 1963.

Most retail stores selling housefurnishings, apparel and related items are operated as single-unit establishments. However, there is a growing trend toward the multiunit operations. In 1963, about a third of the apparel and accessory stores and general merchandise stores were operated by multiunit firms compared with a fourth in 1948.

21/ The source of data for this section and the following section on retail outlets is 1963 Census of Business.

Recent Trends and Prospects

Distribution of finished textile products from manufacturers directly to retail outlets is expected to become more prevalent. As textile and apparel manufacturing firms become larger, more will likely perform in their sales branches and offices the wholesaling functions traditionally performed by merchant wholesalers and merchandise agents and brokers.

Although decreasing in number, the small single-unit retail stores--owned by individual proprietors or partnerships--still account for the largest number of retail outlets. However, their share of total sales and employment is expected to continue to decline.